$$= \frac{4 - \frac{4}{1+U_n}}{2 - \frac{4}{1+U_n}} \times \frac{1+U_n}{1+U_n}$$

$$= \frac{4+4U_n-4}{2+2U_n-4}$$

$$= \frac{4U_n}{-2+2U_n}$$

$$= \frac{4U_n}{2(-1+U_n)} = \boxed{\frac{2U_n}{U_n-1}}$$

□ $V_{n+1} - V_n = \frac{2U_n}{U_n-1} - \frac{1+U_n}{-1+U_n}$

$$= \frac{2U_n-1-U_n}{U_n-1}$$

$$= \frac{U_n-1}{U_n-1} = \boxed{1}$$

Donc (V_n) est une S.A de raison $\boxed{r=1}$

□ Exprimer V_n en fonction de n

□ $V_n = \boxed{V_0 + n \times r}$

$= \boxed{V_1 + (n-1) \times r}$

$= \boxed{V_m + (n-m) \times r}$

Exemples

□ $r=-2 \quad V_0 = 3$

$V_n = \boxed{V_0 + nr} = \boxed{3-2n}$

$$= \frac{U_n-3}{4U_n}$$

$$= \frac{1}{4}\left(\frac{U_n-3}{U_n}\right)$$

$$= \frac{1}{4} V_n$$

Donc (V_n) est un S.G de raison $q = \frac{1}{4}$

□ Exprimer V_n en fonction de n

□ $V_n = \boxed{V_0 \times q^n}$

$= \boxed{V_1 \times q^{n-1}}$

$= \boxed{V_m \times q^{n-m}}$

Exemples

□ $q=-2 \quad V_0 = -5$

$V_n = V_0 \times q^n = \boxed{-5 \times (-2)^n}$

□ $q=-3 \quad V_1 = 2$

$V_n = V_1 \times q^{n-1} = 2 \times (-3)^{n-1}$

$= 2 \times (-3)^n \times (-3)^{-1}$

$= \boxed{-\frac{2}{3}(-3)^n}$